What Is Claimed Is:

1. A metal reaction method, comprising:
providing a metal particle;
linking the metal particle to an enzyme substrate;
providing an enzyme; and
reacting the enzyme substrate with the enzyme.

2. The method of claim 1 comprising the step of holding the metal particle in the vicinity of the enzyme.

3. The method of claim 1 comprising the step of depositing the metal particle in the vicinity of the enzyme.

4. The method of claim 1 comprising the step of depositing the metal particle within about 1 micron of the enzyme.

5. The method of claim 1 wherein a plurality of metal particles are provided; and comprising the step of accumulating at least some of the metal particles in the vicinity of the enzyme.

6. The method of claim 1 wherein the step of linking comprises forming an at least partially organic coating on at least some of the metal particle and attaching the enzyme substrate to the at least partially organic coating.

7. The method of claim 1 wherein the metal particle has an at least partially organic coating; and the step of linking comprises incorporating the enzyme substrate into the coating.

8. The method of claim 1 wherein the metal particle has an at least partially organic coating; and the step of linking comprises incorporating the enzyme substrate into the coating during formation of the coating.

9. The method of claim 1 wherein the metal particle is at least partially covered with an at least partially organic coating; and the step of reacting comprises enzymatic alteration of the coating.

10. The method of claim 1 wherein the metal particle has an at least partially organic coating; and the step of reacting comprises enzymatic cleavage of a chemical group.

11. The method of claim 1 wherein the metal particle has a diameter of 0.8 to 50 nanometers.

12. The method of claim 1 wherein the metal particle is selected from the group consisting of silver, gold, iron, mercury, nickel, copper, platinum, palladium, cobalt, iridium and mixtures thereof.

13. The method of claim 1 wherein the enzyme is selected from the group consisting of oxido-reductases, hydrolases, transferases, phosphorylases, decarboxylases, hydrases, isomerases and mixtures thereof.

14. The method of claim 1 wherein the enzyme is peroxidase.

15. The method of claim 1 wherein the enzyme is horseradish peroxidase.

16. The method of claim 1 comprising the step of pretreating the enzyme with metal ions prior to the step of depositing.

17. The method of claim 1 comprising the step of forming a coating over at least a portion of the metal particle.

18. The method of claim 1 wherein the enzyme is attached to a surface.

19. The method of claim 1 wherein the step of linking the metal particle to the enzyme substrate forms a new enzyme substrate.

20. A metal reaction method, comprising:

providing a metal surface;

attaching the metal surface to an enzyme substrate;

providing an enzyme; and

reacting the enzyme substrate with the enzyme.

21. The method of claim 20 wherein the metal surface has an at least partially organic coating and the step of reacting comprises enzymatic alteration of the coating.

22. The method of claim 20 wherein the metal surface is a metal particle.

23. A metal ion reaction method, comprising:

providing a metal ion, an oxidizing agent and a reducing agent;

providing an enzyme;

reacting the enzyme with the metal ions, oxidizing agent and reducing agent; and

reducing at least some of the metal ions to metal in a zero oxidation state.

24. The method of claim 23 comprising depositing the zero oxidation state metal in the vicinity of the enzyme.

25. The method of claim 23 comprising depositing the zero oxidation state metal within about 1 micron of the enzyme.

26. The method of claim 23, wherein the metal ions, the oxidizing agent and the reducing agent are part of a developing mix; and the step of reacting comprises reacting the enzyme with the developing mix.

27. The method of claim 23, wherein the metal ions, the oxidizing agent and the reducing agent are part of a developing mix; and the step of reacting comprises initially reacting the enzyme with a pretreatment solution of metal ions and subsequently reacting the enzyme with the developing mix.

28. The method of claim 23, wherein the metal ions, the oxidizing agent and the reducing agent are part of a developing mix; and the step of reacting comprises initially reacting the enzyme with a pretreatment solution of metal ions selected from the group consisting of gold ions and silver ions, and subsequently reacting the enzyme with the developing mix.

29. The method of claim 23, wherein a developing mix is comprised of the metal ions, the oxidizing agent and the reducing agent in a pH buffer; and the step of reacting comprises reacting the enzyme with the developing mix.

30. The method of claim 23, wherein the metal ions are silver ions, the oxidizing agent is hydrogen peroxide, the reducing agent is hydroquinone and a developing mix is comprised of the silver ions, the hydrogen peroxide and the hydroquinone in a controlled pH buffer solution; and the step of reacting comprises initially reacting the enzyme with a pretreatment solution of silver ions and subsequently reacting the enzyme with the developing mix.

31. The method of claim 23, wherein the metal ion is selected from the group consisting of ions of silver, gold, iron, mercury, nickel, copper, cesium, lead, palladium and mixtures thereof.

32. The method of claim 23, wherein the enzyme is selected from the group consisting of oxido-reductases, hydrolases, transferases, phosphorylases, decarboxylases, hydrases, isomerases and mixtures thereof.

33. The method of claim 23, wherein the enzyme is horseradish peroxidase.

34. The method of claim 23 comprising a step of pretreating the enzyme with pretreatment metal ions prior to a step of depositing the zero oxidation state metal in the vicinity of the enzyme.

35. The method of claim 23 comprising a step of pretreating the enzyme with pretreatment metal ions to enhance the step of reducing at least some of the

metal ions to metal in a zero oxidation state prior to a step of depositing the zero oxidation state metal in the vicinity of the enzyme.

36. The method of claim 23 comprising a step of pretreating the enzyme with pretreatment metal ions to inhibit the step of reducing at least some of the metal ions to metal in a zero oxidation state prior to a step of depositing the zero oxidation state metal in the vicinity of the enzyme.

37. The method of claim 23 comprising a step of depositing the zero oxidation state metal within a cell.

38. The method of claim 23, wherein the step of reducing takes place within a cell and comprising a step of depositing the zero oxidation state metal within a cell.

39. The method of claim 23, wherein the enzyme is localized to an antigen.

40. The method of claim 23, wherein the enzyme is localized to a predetermined antigen.

41. The method of claim 23, wherein the enzyme is localized to one of a nucleic acid or a nucleic acid probe.

42. The method of claim 23, wherein the enzyme is localized to a predetermined nucleic acid probe.

43. The method of claim 23, wherein the enzyme is localized to a member selected from the group consisting of antibody, antibody fragments, antigen, peptide, nucleic acids, nucleic acid probes, carbohydrates, drugs, steroids, products from plants, animals, humans and bacteria, and synthetic molecules that have an affinity for binding particular targets.

44. The method of claim 23, wherein a coating is autometallographically formed over at least a portion of the metal.

45. The method of claim 23, wherein the metal ion acts as a substrate for the enzyme.

46. A metal deposition method, comprising:

providing a first enzyme;

reacting the first enzyme with a first substrate to form a second substrate thereby;

reacting a second enzyme with the second substrate and a solution of metal ions; and

reducing at least some of the metal ions to metal in a zero oxidation state.

47. A method of depositing metal inside a cell comprising exposing the cell to a metal ion; and enzymatically reducing the metal ion to a metal in a zero oxidation state within the cell.

48. The method of claim 47 wherein the step of exposing comprises exposing the cell to a developing mix including the metal ion, a reducing agent and an oxidizing agent in a controlled pH buffer.

49. The method of claim 47 wherein the cell is alive during the step exposing and remains alive during the step of enzymatically reducing.

50. A test kit comprising means for enzymatically depositing metal in a zero oxidation state, wherein the enzymatically deposited metal provides a detectable test result.

51. The test kit of claim 50 wherein the means for enzymatically depositing metal in a zero oxidation state comprises:

a metal ion selected from cesium, at least one metal ion in periodic table group 1b, at least one metal ion in periodic table group 2a, at least one metal ion in periodic table group 4a, at least one metal ion in periodic table group 8 and mixtures thereof;

an oxygen containing oxidizing agent; and

a reducing agent selected from at least one of hydroquinone, a hydroquinone derivative, n-propyl gallate, 4-methylaminophenol sulfate, 1,4 phenylenediamine, o-phenylenediamine, chloroquinone, bromoquinone, 2-methoxyhydroquinone, hydrazine, 1-phenyl-3-pyrazolidinone and dithionite salts.

52. The test kit of claim 50 wherein the means for enzymatically depositing metal in a zero oxidation state comprises silver ions; hydrogen peroxide; and hydroquinone or a hydroquinone derivative.

53. A biosensor for providing a signal related to changes in a selective test condition comprising:

an enzyme;

an enzyme substrate reactable with the enzyme, wherein the reaction of the enzyme and enzyme substrate provides a signal proportional to a selective test condition; and

means for detection of the signal.

54. A method of fabricating an object comprising:

treating a structure with a binding moiety;

localizing an enzyme to the binding moiety; and

enzymatically depositing metal in the vicinity of the enzyme.

55. The method of claim 54 wherein the structure is biological.

56. A remediation method comprising:

providing a carrier stream containing a material selected from the group consisting of metal ions, metal particles and mixtures thereof;

reacting an enzyme and an enzyme substrate with the carrier stream; and

enzymatically depositing the material.

57. A test method comprising:

providing a first material comprising one of an enzyme or an enzyme substrate;

exposing the first material to a test sample, wherein the first material will attach to a predetermined target if the test sample includes the target;

reacting the test sample with a second material comprising a first part selected from the group consisting of metal ions, metal particles and mixtures thereof and a second part comprising the other of the enzyme or the enzyme substrate; and

enzymatically accumulating metal in a zero oxidation state if the target is present in the test sample.

58. The test method of claim 57 wherein the accumulated metal provides quantitative measurement of an amount of the target present in the sample.

59. The test method of claim 57, wherein the first material comprises an oxido-reductase enzyme.

60. A test method, comprising:

providing a tissue sample suspected of having a target;

exposing the tissue sample to an enzyme to link the enzyme to the target if the target is present; and

enzymatically depositing metal in a zero oxidation state in the vicinity of the target if the target is present.

61. The test method of claim 60 wherein the step of enzymatically depositing metal comprises:

combining the exposed tissue sample with metal ions and an oxidizing agent; and

reducing at least some of the metal ions to metal in a zero oxidation state in the vicinity of the target if the target is present.

62. The test method of claim 60 wherein the step of enzymatically depositing metal comprises:

combining the exposed tissue sample with metal ions, an oxidizing agent and a reducing agent; and

reducing at least some of the metal ions to metal in a zero oxidation state in the vicinity of the target if the target is present.

63. The method of claim 60 further including the step of removing enzyme not linked to the target before the step of enzymatically depositing.

64. The test method of claim 60 wherein the step of enzymatically depositing metal comprises:

combining the exposed tissue sample with metal ions selected from cesium, periodic table group 1b, periodic table group 2a, periodic table group 4a, periodic table group 8 and mixtures thereof; an oxygen containing oxidizing agent; and a reducing agent selected from at least one of hydroquinone, a hydroquinone derivative, n-propyl gallate, 4-methylaminophenol sulfate, 1,4 phenylenediamine, o-phenylenediamine, halogenated quinone, 2-methoxyhydroquinone, hydrazine, 1-phenyl-3-pyrazolidinone and dithionite salts; and

reducing at least some of the metal ions to metal in a zero oxidation state in the vicinity of the target if the target is present

65. The test method of claim 60 wherein the step of enzymatically depositing metal comprises:

combining the exposed tissue sample with silver ions, hydrogen peroxide and hydroquinone or a hydroquinone derivative; and

reducing at least some of the metal ions to metal in a zero oxidation state in the vicinity of the target if the target is present.

66. The method of claim 60 wherein the target comprises at least one of an antigen, a peptide, a protein, a nucleic acid, a lipid, a carbohydrate, a cellular component, a drug, a steroid, a bacterium, a virus or a cell type.

67. The test method of claim 60 comprising the step of detecting the enzymatically deposited metal.

68. The test method of claim 60 wherein the target comprises an enzyme substrate localized to an antigenic site.